Results of dorsal wrist synovectomies in the rheumatoid hand

Seventy-eight patients with rheumatoid arthritis had 102 dorsal wrist tenosynovectomies, intraarticular synovectomies, and Darrach resection from 1962 to 1982. Follow-up after surgery averaged 11 years, with a range from 3 to 20 years. Pain was diminished in all but 17 wrists and motion decreased an average of 13 degrees. Synovitis recurred in 16 wrists and x-ray evidence of progressive intraarticular destruction was seen in 45 wrists. Revision surgery was necessary in 28 wrists. (J Hand Surg 1990;15A:733-5.)

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Rheumatoid synovitis commonly affects the wrist causing pain, joint destruction, and tendon ruptures. While good results are usually reported after extensor tendon synovectomy, the results after dorsal wrist (intraarticular) synovectomy have been quite variable. This article reports our results after dorsal wrist synovectomy and Darrach resection of the distal ulna in patients with rheumatoid arthritis.

Methods

Under tourniquet control, an oblique incision is made 3 cm proximal to the ulnar head radially to the base of the second metacarpal. Longitudinal veins are preserved. Dorsal cutaneous branches of the radial and ulnar nerves are identified and protected. The dorsal retinaculum over the fourth extensor compartment is divided and reflected radially. A tenosynovectomy is then done. The distal 1 cm of the ulna is excised and the radial margin is smoothed along with Lister's tubercle and any spurs on the dorsal radius. The wrist capsule is opened distally and a synovectomy done in the radiocarpal and midcarpal joints. The wrist capsule is closed with interrupted resorbable sutures. Two thirds of the distal retinaculum is sutured under the extensor tendons. Tendon reconstruction by transfer or piggyback tenorrhaphy is done as necessary. The proximal one third of the dorsal retinaculum is sutured over the extensor tendons to lessen postoperative bow-stringing. The wound is drained, skin closed, and a bulky compression dressing with a palmar splint is applied. The tourniquet is released after surgery and our operating time was 1 hour and 25 minutes.

Immobilization is continued for 3 weeks after which active motion with intermittent splinting is begun. When tendon reconstruction was required, immobilization was continued for 4 weeks and night splinting used for 2 additional weeks.

Materials

One hundred thirty-five dorsal wrist synovectomies were done on 104 patients with rheumatoid arthritis: 26 of whom were lost to follow-up, leaving 78 patients with 102 procedures for evaluation.

The patients' average age was 51 years, with a range from 17 to 75 years; they were followed for a minimum of 3 years, with an average follow-up of 11 years. Fifty-nine women and 19 men were the patient population whose average duration of the disease was 15 years (5 to 50 years).

All patients were initially treated nonoperatively with medication, orthoses, and exercises. The primary indication for operation was synovitis present from 4 to 6 months after failure to respond to nonoperative treatment.

X-ray changes of narrowing, sclerosis, and osteo-
Table I. Assessment system

Pain was assessed on a scale of 0-10 (0 = none; 10 = complete)
1. Subjective evaluation:
   — Pain relief
   — Deformity correction
2. Objective evaluation:
   — Active motion
   — Stability
   — Cessation of disease

Pain was present in 15 wrists and 87 wrists had these in addition to erosions and cyst formation.

At operation all wrists had hypertrophic synovium, articular destruction of varying amounts and pannus formation, as well as increased synovial fluid.

Results

In this retrospective study, pain was evaluated by a linear analog scale where 10 represents as much pain as the patient could imagine and 0 represents the absence of pain. Average preoperative pain was assessed at 6 (± 2), while postoperatively it decreased to 2 (± 1) (standard deviation). Nine patients had increased pain postoperatively and eight patients indicated their pain was unchanged (mean preoperatively extension was 40 degrees, and postoperatively extension was 60 degrees). Preoperative supination averages 20 degrees, and postoperative supination averaged 26 degrees.

The Rancho Los Amigos score (Table II) was used to evaluate pain relief, active motion, and cessation of the disease on a scale from 0 to 5. A score of 4 or above was considered good, 3 was fair, and below 3 was poor. Using this method, the procedure was rated excellent, 40 or above; good, 35 or above; and below 30 was poor.

Synovitis, present in moderate-to-severe degree in all patients, recurred in 16 patients. X-ray films revealed increased intraarticular destruction postoperatively in 45 (44%) wrists. Strength was not evaluated.

At the time of operation, 62 tendon ruptures were found, mainly involving the extensor digitorum com-
munis. Of these, 21 involved the small finger, 23 the ring finger, 6 the long finger, 1 the index finger, and 11 the thumb. Single digit ruptures were treated by the piggy-back operation, double and triple tendon ruptures were treated by a combination of side-to-side repair, transfer of the extensor indicis proprius, and a superficialis tendon transfer as necessary. There were no quadruple tendon ruptures.

Complications

Skin necrosis developed, with slight wound dehiscence and superficial infection, in 5 wrists following a lazy-S incision, which responded to local wound care and antibiotics. In two other wrists deep infections developed, which required debridement and antibiotics; one healed within 1 month, the other took 5 months.

Revision surgery was necessary at an average of 6 years after surgery in 28 wrists (27% of the patients) because of increasing synovitis, tendon ruptures, instability, and increasing radiographic evidence of intraarticular wrist destruction. Repeat synovectomies were done in nine wrists with minimal x-ray changes. Postoperative tendon ruptures occurred in 5 of the patients with revision surgery. Four patients with stable wrists and intact wrist extensors were revised to a palmar shelf arthroplasty, and a total wrist replacement was performed. Unstable wrists were arthrodosed.

The rheumatoid wrist has been ascribed to disease and/or tendon invasion by synovitis. At follow-up the patients in our study had less pain postoperatively in 83% of the wrists. It was unclear if surgery was entirely responsible for this because most of the patients were on some form of treatment, including aspirin, steroids, or both. Nevertheless, the pain relief in our patients compare favorably with other series.

We believe that the patient with rheumatoid arthritis is not a candidate for dorsal wrist (tenosynovectomy and intraarticular) synovectomy plus Darrach resection. Our results indicate that this procedure provides a satisfactory result on the basis of pain relief and patient satisfaction even though the wrist motion decreased after operation. However, 44% of these
patients have increasing intraarticular destruction and slightly more than one half of the patients with increasing intraarticular destruction require revision surgery.

REFERENCES


Type IV flexor digitorum profundus avulsion

Flexor digitorum profundus avulsions, are well-documented injuries occasionally associated with a distal phalanx fragment. While the injury may involve primarily either tendon or bone, a rarely observed variant combines both tendon and bone avulsions. A Type IV variant seen after two sequential injuries is described. (J HAND SURG 1990;15A:735-9.)

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Avulsions of the flexor digitorum profundus (DFP) have become well-known injuries. Emphasis in diagnosis and timely repair is the key to successful management. The injury patterns most readily recognized are those classified by Leddy and Packer, based primarily on the level of retraction of the injured tendon. Type I avulsions involve retraction of the DFP to the palmar level. Type II retract to the level of the proximal interphalangeal (PIP) joint or superficialis decussation and may contain a small fragment of bone, and type III are retained at the A4 pulley usually carrying a large fragment of distal phalanx. An extension of this classification system has been suggested by Smith. These designated Type IV avulsions consist of a bone fragment avulsion from the distal phalanx and an associated tendon avulsion from the fragment with subsequent retraction of the tendon. The following case represents a variant of the Type IV avulsions.